

What is claimed is:

1. A thermal treatment equipment for heating a substrate using gas heated by a gas-heating unit as a heating source, comprising:
 - treatment rooms of n pieces ($n > 2$) for performing heat-treating, each having
 - 5 the gas-heating unit;
 - a preparatory heating room; and
 - a cooling room,

wherein a gas-supplying unit is connected to a gas charge port of the cooling room, a discharge port of the cooling room is connected to a first gas-heating unit

10 through a heat exchanger, a charge port of an m-th ($1 \leq m \leq (n-1)$) treatment room is connected to a discharge port of an m-th gas-heating unit, a charge port of an n-th treatment room is connected to a discharge port of an n-th gas-heating unit, a discharge port of the n-th treatment room is connected to the heat exchanger, and a discharge port of the heat exchanger is connected to a gas charge port of the

15 preparatory heating room.
2. A thermal treatment equipment according to Claim 1, wherein the gas is nitrogen or noble gas.
- 20 3. A thermal treatment equipment according to Claim 1, wherein the gas is reducing gas.
4. A thermal treatment equipment according to Claim 1, wherein the gas is oxidizing gas.
- 25 5. A thermal treatment equipment according to Claim 1, wherein the treatment room is formed of quartz or ceramic.
6. A method for thermal treatment comprising the step of:
 - heating a substrate by using gas heated by a heating unit as a heating source.

wherein the thermal treatment is performed by using a thermal treatment equipment comprising treatment rooms of n pieces ($n > 2$) each having the heating unit, a preparatory heating room, and a cooling room, gas heated by an m -th ($1 \leq m \leq (n-1)$) heating unit is supplied to an m -th treating room by treating rooms and 5 gas-heating units of n pieces ($n > 2$), gas supplied to the m -th treatment room is heated by an $(m+1)$ -th heating unit and is supplied to an $(m+1)$ -th treatment room. substrates arranged at the treatment room of n pieces are heated, gas supplied to an 10 n -th treatment room is supplied to a heat exchanger. gas supplied from a gas-supplying unit is used as a heating source for heating, gas supplied from the gas-supplying unit is supplied to the cooling room, gas discharged from the cooling room is supplied to a first gas-heating unit through the heat exchanger, and gas discharged from the heat exchanger is supplied to the preparatory heating room.

7. A method for thermal treatment according to Claim 6, wherein nitrogen or 15 noble gas is used for the gas.

8. A method for thermal treatment according to Claim 6, wherein reducing gas is used for the gas.

20 9. A method for thermal treatment according to Claim 6, wherein oxidizing gas is used for the gas.

10. A thermal treatment equipment comprising:
treatment rooms of n pieces ($n > 2$) for performing heat-treating;
25 a preparatory heating room; and
a cooling room,
wherein a gas-supplying unit is connected to a gas charge port of the cooling room, a discharge port of the cooling room is connected to a first gas-heating unit through a heat exchanger, a charge port of an m -th ($1 \leq m \leq (n-1)$) treatment room 30 is connected to a discharge port of an m -th gas-heating unit, a charge port of an n -th

treatment room is connected to a discharge port of an n-th gas-heating unit, a discharge port of the n-th treatment room is connected to the heat exchanger, and a discharge port of the heat exchanger is connected to a gas charge port of the preparatory heating room.

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11. A thermal treatment equipment according to Claim 10, wherein nitrogen or noble gas is used for the gas.

12. A thermal treatment equipment according to Claim 10, wherein reducing 10 gas is used for the gas.

13. A thermal treatment equipment according to Claim 10, wherein oxidizing gas is used for the gas.

15 14. A thermal treatment equipment according to Claim 10, wherein the treatment room is formed of quartz or ceramic.

15. A thermal treatment equipment comprising:
treatment rooms of n pieces ($n > 2$); and
20 gas-heating units of n pieces ($n > 2$),
wherein a charge port of an m-th ($1 \leq m \leq (n-1)$) treatment room is connected to a discharge port of an m-th gas-heating unit, a charge port of an n-th treatment room is connected to a discharge port of an n-th gas-heating unit, and a discharge port of the n-th treatment room is connected to a heat exchanger.

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16. A thermal treatment equipment according to Claim 15, wherein nitrogen or noble gas is used for the gas.

17. A thermal treatment equipment according to Claim 15, wherein reducing 30 gas is used for the gas.

18. A thermal treatment equipment according to Claim 15, wherein oxidizing gas is used for the gas.

5 19. A thermal treatment equipment according to Claim 15, wherein the treatment room is formed of quartz or ceramic.

10 20. A method for thermal treatment comprising the steps of: introducing n substrates ($n > 2$) into treatment rooms of n pieces; and heating the n substrates by gas-heating units of n pieces as heating sources, wherein a charge port of an m-th ($1 \leq m \leq (n-1)$) treatment room is connected to a discharge port of an m-th gas-heating unit, a charge port of an n-th treatment room is connected to a discharge port of an n-th gas-heating unit, and a discharge port of the n-th treatment room is connected to a heat exchanger.

15 21. A method for thermal treatment according to Claim 20, wherein nitrogen or noble gas is used for the gas.

20 22. A method for thermal treatment according to Claim 20, wherein reducing gas is used for the gas.

23. A method for thermal treatment according to Claim 20, wherein oxidizing gas is used for the gas.

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